Those of skill will further appreciate that the various illustrative logical blocks, modules, circuits, and algorithm steps described in connection with the embodiments disclosed herein may be implemented as electronic hardware, computer software, or combinations of both. To clearly illustrate this interchangeability of hardware and software, various illustrative components, blocks, modules, circuits, and steps have been described above generally in terms of their functionality. Whether such functionality is implemented as hardware or software depends upon the particular application and design constraints imposed on the overall system. Skilled artisans may implement the described functionality in varying ways for each particular application, but such implementation decisions should not be interpreted as causing a departure from the scope of the present invention.

The various illustrative logical blocks, modules, and circuits described in connection with the embodiments disclosed herein may be implemented or performed with a general purpose processor, a digital signal processor (DSP), an application specific integrated circuit (ASIC), a field programmable gate array (FPGA) or other programmable logic device, discrete gate or transistor logic, discrete hardware components, or any combination thereof designed to perform the functions described herein. A general-purpose processor may be a microprocessor, but in the alternative, the processor may be any conventional processor, controller, microcontroller, or state machine. A processor may also be implemented as a combination of computing devices, e.g., a combination of a DSP and a microprocessor, a plurality of microprocessors, one or more microprocessors in conjunction with a DSP core, or any other such configuration.

The steps of a method or algorithm described in connection with the embodiments disclosed herein may be embodied directly in hardware, in a software module executed by a processor, or in a combination of the two. A software module may reside in RAM memory, flash memory, ROM memory, EPROM memory, EEPROM memory, registers, hard disk, a removable disk, a CD-ROM, or any other form of storage medium known in the art. An exemplary storage medium is coupled to the processor such the processor can read information from, and write information to, the storage medium. In the alternative, the storage medium may be integral to the processor. The processor and the storage medium may reside in an ASIC. The ASIC may reside in a user terminal. In the alternative, the processor and the storage medium may reside as discrete components in a user terminal.

The previous description of the disclosed embodiments is provided to enable any person skilled in the art to make or use the present invention. Various modifications to these embodiments will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other embodiments without departing from the spirit or scope of the invention. Thus, the present invention is not intended to be limited to the embodiments shown herein but is to be accorded the widest scope consistent with the principles and novel features disclosed herein.

What is claimed is:

1. An apparatus, comprising:

a first Hadamard encoder for receiving a plurality of symbol streams for respective ones of a plurality of remote stations and encoding each of the symbol streams with one of a plurality of covering sequences with pattern repetition to form a plurality of covered streams, wherein each of the plurality of covering sequences is based on a remote station identifier for the respective one of the plurality of remote stations, wherein the first Hadamard encoder segments encoding time into two or more segments and covers each of the plurality of symbol streams with two or more sequences with pattern repetition, each sequence for covering during the two or more segments, respectively, and the sequence covering each symbol stream during a segment being unique to the respective symbol stream, and wherein a first Hadamard sequence is selected corresponding to a first remote station identifier and a second Hadamard sequence is selected based on a second remote station identifier;

a summer for summing the plurality of covered streams to form a first Code Division Multiplexed (CDM) signal; and

a second encoder for covering the first CDM signal with a Walsh covering sequence to form first covered CDM signal.

2. The apparatus of claim **1**, further comprising one or more channel gain blocks for receiving a plurality of gain values and multiplying the plurality of covered streams by the plurality of gain values, respectively, prior to delivery to the summer.

3. The apparatus of claim **1**, wherein one or more of the plurality of symbol streams comprises command values, the command values indicating acknowledgement, negative acknowledgement, or acknowledge and continue.

4. The apparatus of claim **1**, further comprising a transmitter for receiving the first covered CDM signal and one or more additional covered signals, combining the first covered CDM signal and the one or more additional covered signals to form a combined CDM signal, and transmitting the combined CDM signal to a remote station.

5. The apparatus of claim **1**, wherein each sequence is assigned in a time varying manner.

6. A non-transitory processor readable media, operable to perform the following steps;

Hadamard covering each of a plurality of symbol streams with one of a plurality of covering sequences with pattern repetition to form a plurality of covered streams, wherein each of the plurality of covering sequences is based on a remote station identifier of the respective remote station, wherein Hadamard covering includes utilizing a Hadamard encoder in which the Hadamard encoder segments encoding time into two or more segments and covers each of the plurality of symbol streams with two or more sequences with pattern repetition, each sequence for covering during the two or more segments, respectively, and the sequence covering each symbol stream during a segment being unique to the respective symbol stream, and wherein a first Hadamard sequence is selected corresponding to a first remote station identifier and a second Hadamard sequence is selected based on a second remote station identifier;

summing subsets of the plurality of covered streams to form a plurality of CDM signal;

time division multiplexing the plurality of CDM signals to form a TDM signal; and

covering the TDM signal with a Walsh covering sequence to form a first covered TDM/CDM signal configured for transmission in CDM fashion.

7. A non-transitory processor readable media, operable to perform the following steps:

Hadamard covering each of a plurality of symbol streams for respective ones of a plurality of remote stations with one of a plurality of covering sequences with pattern repetition to form a plurality of covered streams, wherein each of the plurality of covering sequences is based on a remote station identifier for the respective one of the plurality of remote stations, wherein Hadamard